

CLAIMS

[cl001] 1. A curing light comprising:

- a housing for housing components of a curing light,
- a pistol grip on said housing for grasping by a human hand,
- a trigger on said housing proximal to said pistol grip for actuation by a human finger to cause light to be emitted by the curing light,
- air space within said housing,
- at least one air vent located on said housing,
- a secondary heat sink located within said housing, said secondary heat sink having a proximal and a distal side,
- a thermoelectric cooler to assist in heat dissipation located on said secondary heat sink proximal side,
- a fan located within said housing, said fan being capable of causing air to move past said thermoelectric cooler in order to improve heat dissipation,
- a plurality of light emitting semiconductor modules located on said heat sink distal side, each of said semiconductor modules including
 - a primary heat sink,
 - a semiconductor chip which emits light of a wavelength useful for curing light curable composite materials, said chip being affixed to said primary heat sink,
 - a cover serving to protect said chip,
 - a first light reflective device which collects light emitted by said semiconductor modules and reflects it as a light beam,
 - a focusing lens which serves to focus said light beam from said first light reflective device into a concentrated light beam, and
 - a second light reflective device which reflects said concentrated light beam in a direction where it may be used to cure composite materials.

[cl002] 2. A curing light as recited in claim 1 wherein said semiconductor chip is selected from the group consisting of light emitting diode chips, laser chips, light emitting diode chip array, diode laser chips, diode laser chip arrays, surface emitting laser chips, edge emitting laser chips, and VCSEL chips.

[cl003] 3. A curing light as recited in claim 1 wherein said first light reflective device has a light reflective interior surface; and wherein said light reflective interior surface includes a material selected from the group consisting of Al, Au, Ag, Zn, Cu, Pt, chrome, other metals, plating, and plastic.

[cl004] 4. A curing light as recited in claim 1 wherein said first light reflective device has a curved interior surface.

[cl005] 5. A curing light as recited in claim 1 wherein said first light reflective device has an interior surface that is at least partially parabolic in shape.

[cl006] 6. A curing light as recited in claim 1 wherein at least one of said light reflective devices has an interior surface that includes a material selected from the group consisting of Al, Au, Ag, Zn, Cu, Pt, chrome, other metals, plating, and plastic.

[cl007] 7. A curing light comprising:
a housing for housing components of a curing light,
a pistol grip on said housing for grasping by a human hand,
a trigger on said housing proximal to said pistol grip for actuation by a human finger to cause light to be emitted by the curing light,
air space within said housing,
at least one air vent located on said housing,
a heat sink located within said housing, said heat sink having a proximal and a distal side,
a thermoelectric cooler to assist in heat dissipation located on said secondary heat sink proximal side,
a fan located within said housing, said fan being capable of causing air to move past said thermoelectric cooler in order to improve heat dissipation,
at least one semiconductor chip capable of emitting light that is useful in curing composite materials,
said heat sink and said thermoelectric cooler being useful in dissipating heat created by said chip,

a first light reflective device which collects light emitted by said semiconductor chip and reflects it as a light beam,

a focusing lens which serves to focus said light beam from said first light reflective device into a concentrated light beam, and

a second light reflective device which reflects said concentrated light beam in a direction where it may be used to cure composite materials.

[cl008] 8. A curing light as recited in claim 7 wherein said semiconductor chip is selected from the group consisting of light emitting diode chips, laser chips, light emitting diode chip arrays, diode laser chips, diode laser chip arrays, surface emitting laser chips, edge emitting laser chips, and VCSEL chips.

[cl009] 9. A curing light as recited in claim 7 wherein at least one of said light reflective devices has an interior surface that includes a material selected from the group consisting of Al, Au, Ag, Zn, Cu, Pt, chrome, other metals, plating, and plastic.

[cl010] 10. A curing light as recited in claim 7 wherein said first light reflective device has a curved interior surface.

[cl011] 11. A curing light as recited in claim 7 wherein said first light reflective device has an interior surface that is at least partially parabolic in shape.

[cl012] 12. A curing light comprising:
a heat sink,
at least one semiconductor chip capable of emitting light that is useful in curing composite materials,
said heat sink serving to draw heat away from said chip,
said heat sink being useful in dissipating heat created by said chip,
a first light reflective device which collects light emitted by said semiconductor chip and reflects it as a light beam,
a focusing lens which serves to focus said light beam from said first light reflective device into a concentrated light beam, and

a second light reflective device which reflects said concentrated light beam in a direction where it may be used to cure composite materials.

[cl013] 13. A curing light as recited in claim 12 wherein said semiconductor chip is selected from the group consisting of light emitting diode chips, laser chips, light emitting diode chip arrays, diode laser chips, diode laser chip arrays, surface emitting laser chips, edge emitting laser chips, and VCSEL chips.

[cl014] 14. A curing light comprising:
a heat sink,
at least one semiconductor chip capable of emitting light that is useful in curing composite materials,
said heat sink serving to draw heat away from said chip,
said heat sink being useful in dissipating heat created by said chip,
a first light reflective device which collects light emitted by said semiconductor chip and reflects it as a light beam,
a second light reflective device which reflects said light beam in a direction where it may be used to cure composite materials.

[cl015] 15. A curing light as recited in claim 14 wherein said semiconductor chip is selected from the group consisting of light emitting diode chips, laser chips, light emitting diode chip arrays, diode laser chips, diode laser chip arrays, surface emitting laser chips, edge emitting laser chips, and VCSEL chips.

[cl016] 16. A curing light comprising:
a heat sink,
at least one semiconductor chip capable of emitting light that is useful in curing composite materials,
said heat sink serving to draw heat away from said chip,
said heat sink being useful in dissipating heat created by said chip,
a focusing lens which serves to focus light from said chip into a concentrated light beam, and

a light reflective device which reflects said concentrated light beam in a direction where it may be used to cure composite materials.

[cl017] 17. A curing light as recited in claim 16 wherein said semiconductor chip is selected from the group consisting of light emitting diode chips, laser chips, light emitting diode chip arrays, diode laser chips, diode laser chip arrays, surface emitting laser chips, edge emitting laser chips, and VCSEL chips.